

# Supplementary Materials

## Are different configurations of pilot-scale constructed wetlands carbon sources or carbon sinks?

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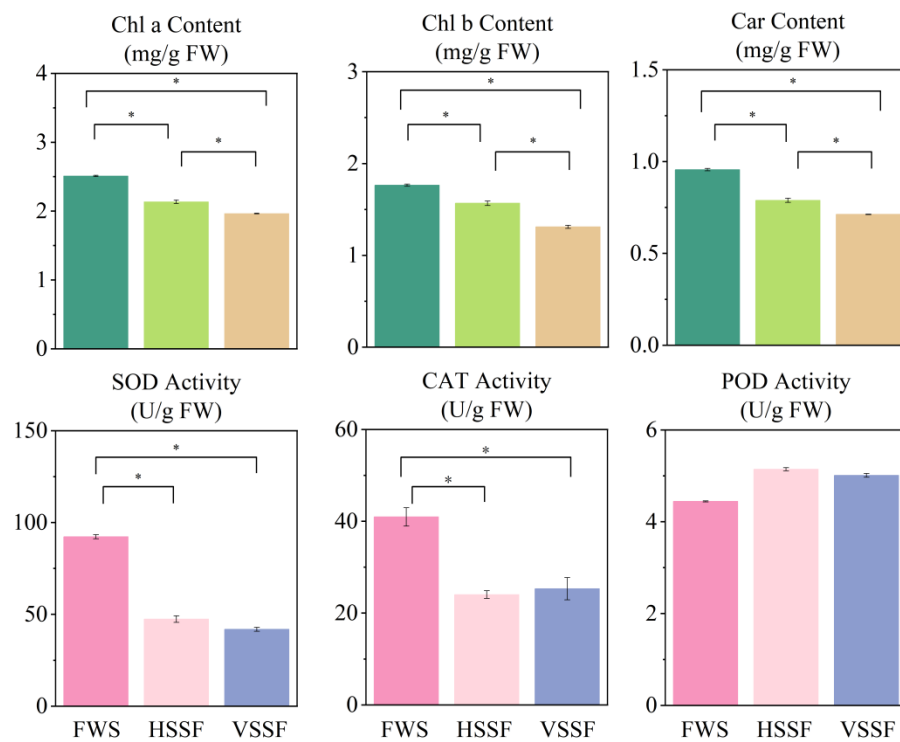
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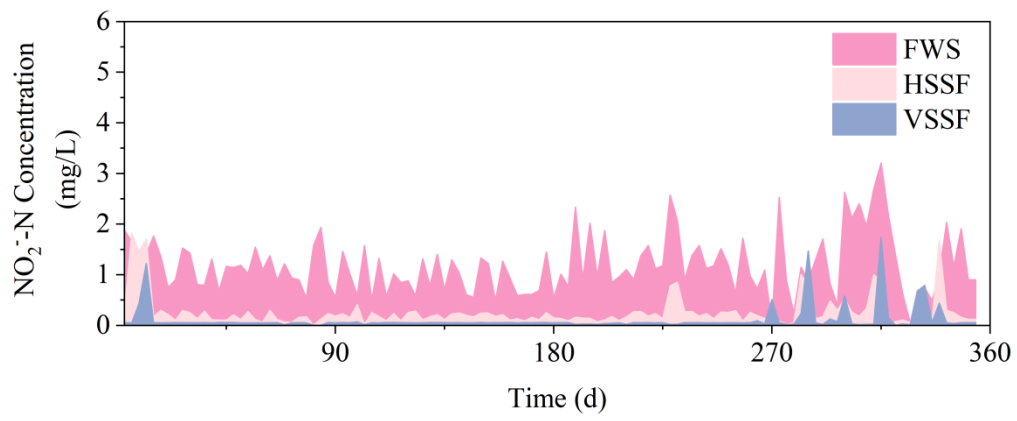
### Summary

Page: **12**; Text: **0**; Figure: **6**; Table: **5**

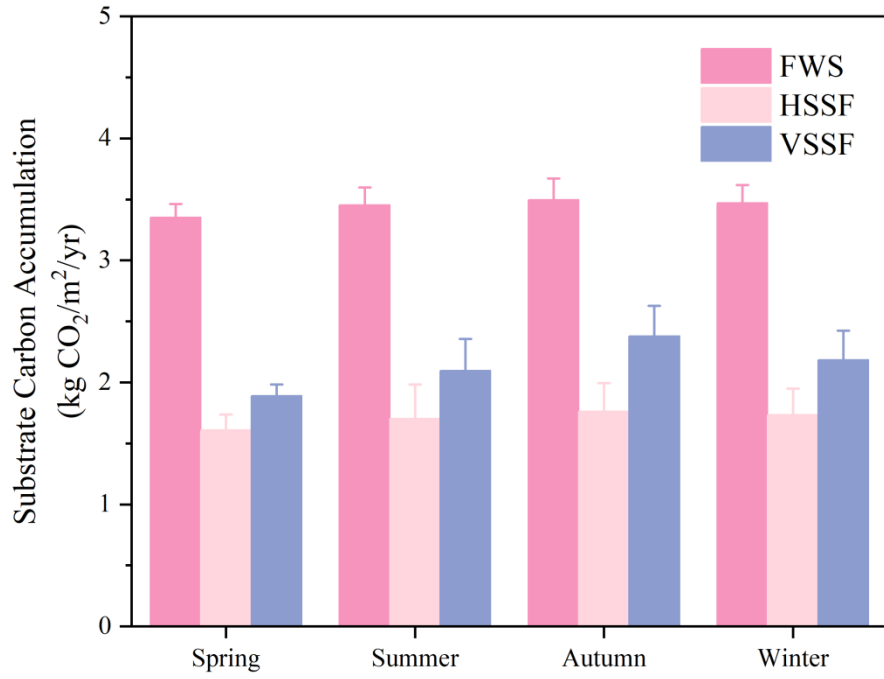
**Figures:**



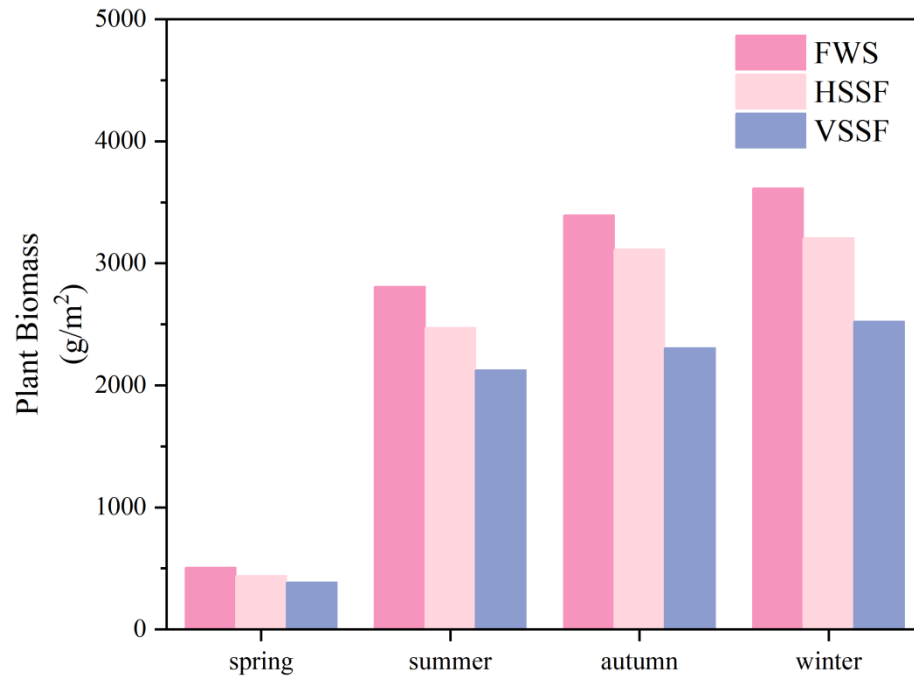
**Fig. S1.** Photosynthetic pigment contents and antioxidant activities in leaves. Note: \* indicates a statistically significant difference ( $p < 0.05$ ).



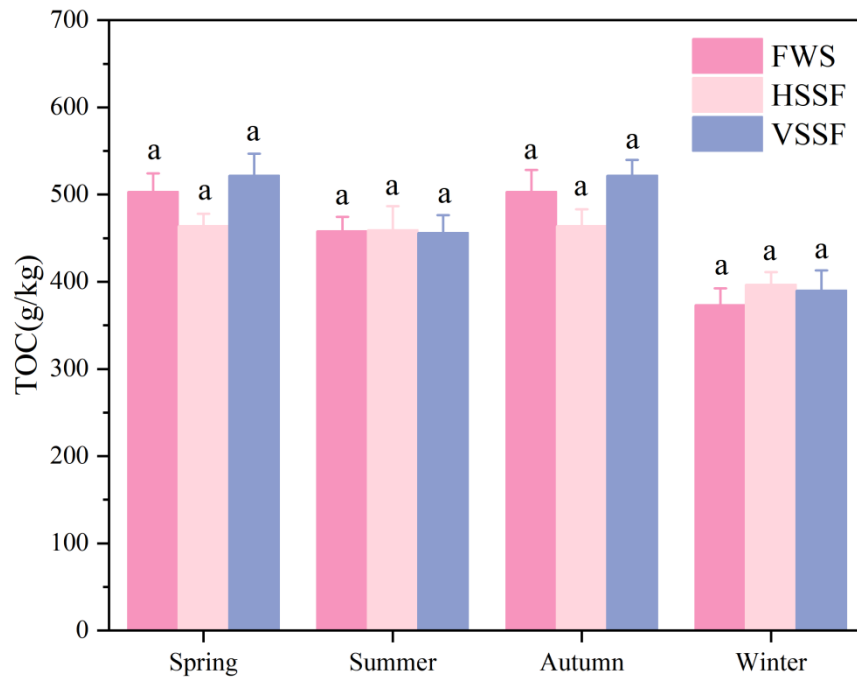
**Fig. S2.** The concentration of  $\text{NO}_2^-$ -N in the effluent from the CWs.



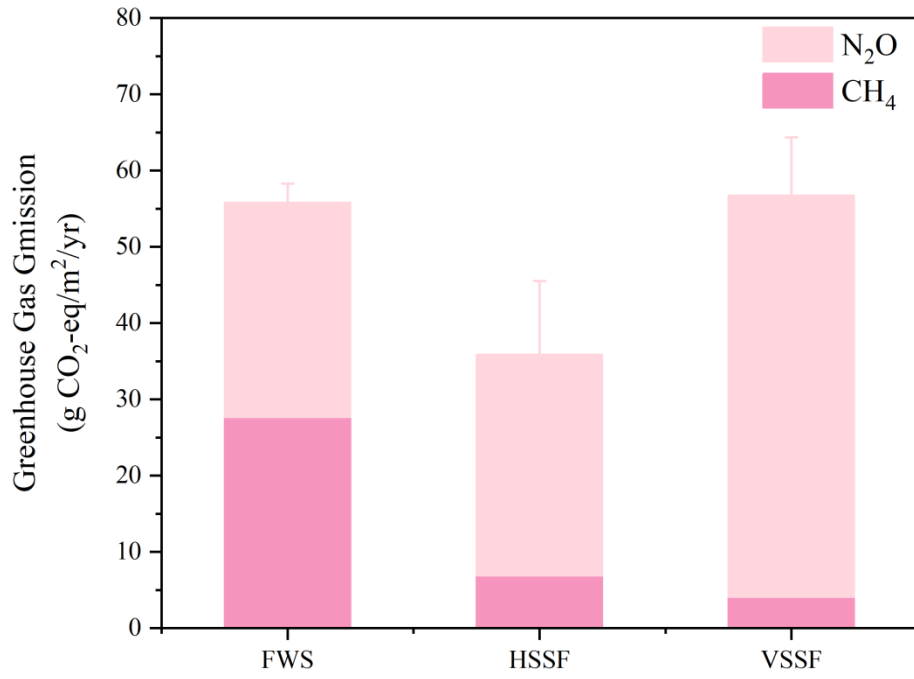
**Fig. S3.** Substrate Carbon changes in different CWs.



**Fig. S4.** Plant biomass changes in different CWs.



**Fig. S5.** TOC contents of plants in different seasons. Note: different lowercase letters in the figures indicate statistically significant differences ( $n = 3$ ,  $p < 0.05$ ) in TOC.



**Fig. S6.** Greenhouse gas emissions in different CWs.

## Tables:

**Table S1** Synthetic tailwater compositions

<b>Parameter</b>	<b>Concentration (mg/L)</b>
Carbon source	Starch soluble (50.64)
Nitrogen source	NaNO <sub>3</sub> (72.85), NH <sub>4</sub> Cl (30.57)
Other composition	KH <sub>2</sub> PO <sub>4</sub> (4.4), CaCl <sub>2</sub> ·2H <sub>2</sub> O (100), MgCl <sub>2</sub> ·6H <sub>2</sub> O (60), FeCl <sub>2</sub> ·4H <sub>2</sub> O (10), EDTA-Na (20), ZnSO <sub>4</sub> ·7H <sub>2</sub> O (0.4), MnCl <sub>2</sub> ·4H <sub>2</sub> O (0.5), CoCl <sub>2</sub> ·6H <sub>2</sub> O (0.6), CuCl <sub>2</sub> ·6H <sub>2</sub> O (0.05), H <sub>3</sub> BO <sub>4</sub> (1.0), NiCl <sub>2</sub> ·6H <sub>2</sub> O (0.04), Na <sub>2</sub> MO <sub>4</sub> ·2H <sub>2</sub> O (0.06), NaHCO <sub>3</sub> (100)

**Table S2** The carbon contents in wastewater with different CWs

<b>Seasonal and annual</b>	<b>FWS</b>	<b>HSSF</b>	<b>VSSF</b>
Spring	15.13 ± 1.94 g C/m <sup>3</sup>	14.23 ± 2.14 g C/m <sup>3</sup>	14.42 ± 1.85 g C/m <sup>3</sup>
Summer	14.66 ± 1.81 g C/m <sup>3</sup>	14.14 ± 1.48 g C/m <sup>3</sup>	14.12 ± 2.04 g C/m <sup>3</sup>
Autumn	15.05 ± 3.08 g C/m <sup>3</sup>	14.51 ± 3.68 g C/m <sup>3</sup>	14.55 ± 3.03 g C/m <sup>3</sup>
Winter	17.26 ± 3.96 g C/m <sup>3</sup>	14.75 ± 2.07 g C/m <sup>3</sup>	14.98 ± 2.33 g C/m <sup>3</sup>
Annual	0.57 kg CO <sub>2</sub> -eq/m <sup>2</sup> /yr	0.11 kg CO <sub>2</sub> -eq/m <sup>2</sup> /yr	0.09 kg CO <sub>2</sub> - eq/m <sup>2</sup> /yr

**Table S3** The substrate carbon accumulation in different CWs

<b>Seasonal and annual</b>	<b>FWS</b>	<b>HSSF</b>	<b>VSSF</b>
Spring	938.04 g C	1314.85 g C	1080.01 g C
Summer	102.67 g C	93.54 g C	206.13 g C
Autumn	41.47 g C	60.52 g C	283.59 g C
Winter	-24.69 g C	-29.92 g C	-193.33 g C
Annual	3470.64	1733.73	2185.15
	g CO <sub>2</sub> -eq/m <sup>2</sup> /yr	g CO <sub>2</sub> -eq/m <sup>2</sup> /yr	g CO <sub>2</sub> -eq/m <sup>2</sup> /yr

**Table S4** Estimation of carbon accumulation of plants in different CWs (kg CO<sub>2</sub>-eq/m<sup>2</sup>/yr)

<b>Seasonal and annual</b>	<b>FWS</b>	<b>HSSF</b>	<b>VSSF</b>
Spring	0.15	0.13	0.13
Summer	0.93	0.90	0.83
Autumn	1.29	1.17	0.96
Winter	1.37	1.30	1.14
Annual	1.34	1.28	1.13

**Table S5** Estimation of greenhouse gas emission in different CWs (g CO<sub>2</sub>-eq/m<sup>2</sup>/yr)

<b>Seasonal and annual</b>	<b>FWS</b>	<b>HSSF</b>	<b>VSSF</b>
Spring	71.57	30.67	56.45
Summer	74.24	61.89	93.96
Autumn	60.06	33.80	48.63
Winter	17.37	17.28	27.98
Annual	55.81	35.91	56.76